

Amendments to the Claims:

A listing of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) An illumination device, comprising:

an incoherent solid state light source adapted to emit light over at least one light emission surface and having a total light emission surface area S_0 ; and

a solid light guide having an entrance aperture adapted to receive the light from the incoherent solid state light source and a first surface that is configured to reflect the light within the solid light guide by total internal reflection, and

a light extraction device adapted to extract the light from the solid light guide and output the light from the incoherent solid state light source,

wherein:

the light extraction device has a refractive index that substantially matches a refractive index of the solid light guide, and includes:

a first surface area S_1 that is in optical contact with the solid light guide and extracts the light by preventing the total internal reflection at the surface area S_1 , and

a second surface area S_2 that outputs the light; and

the first surface area S_1 ~~of the light extraction device is~~ substantially smaller than the surface areas S_0 and S_2 , and

the second surface area S_2 is substantially smaller than the surface area S_0 , such that an apparent brightness of the light output at the second surface area S_2 is substantially larger than an apparent brightness of the light source.

2. (Currently amended) The illumination device of claim 1, wherein the incoherent solid state light source includes a single extended LED having a length that is substantially larger than its width.

3. (Previously presented) The illumination device of claim 1, wherein the incoherent solid state light source includes an array of LEDs.

4. (Previously presented) The illumination device of claim 1, wherein the surface S_1 has a rectangular shape and an aspect ratio of 16:9.

5-7 (Canceled)

8. (Currently amended) An illumination device comprising:

an incoherent solid state light source adapted to emit light over at least one light emission surface and having a total light emission surface area S_0 ;

a light circulation device including a solid light guide that includes at least one light receiving surface adapted to receive the light from the incoherent solid state light source, and at least one light reflecting surface adapted to reflect the light by total internal reflection, and

light extraction means for extracting the light from the reflecting surface of the light circulation device to provide an entirety of light output of the illumination device,

wherein:

the light extraction means has includes:

a light extraction surface of area S_1 in contact with the reflecting surface, and has a refractive index that substantially matches a refractive index of the light circulation device thereby extracting the light by preventing the total internal reflection at the light extraction surface, and

a light output surface of area S_2 that provides the total light output,

area S_1 is smaller than areas S_0 and S_2 , and

area S_2 is substantially smaller than area S_0 , so that an apparent brightness of the light output surface is substantially greater than an apparent brightness of the light emission surface.

9 (Canceled)

10. (Previously presented) The illumination device of claim 8, wherein the light circulation device includes a reflective material disposed on a surface of the light guide that does not support total internal reflection.

11 (Canceled)

12. (Previously presented) The illumination device of claim 8, wherein the light extraction means includes a light collimating structure.

13. (Previously presented) The illumination device of claim 8, wherein the light extraction means includes a compound parabolic collimator.

14. (Previously presented) The illumination device of claim 8, wherein the light extraction means includes a prismatic optical component.

15. (Previously presented) The illumination device of claim 8, including a reflective polarizer disposed in an optical path between the light extraction area and the light extraction means, wherein the light circulation device includes at least one diffusing reflector disposed at a sidewall thereof.

16. (Previously presented) The illumination device of claim 8, wherein the light circulation device includes at least one specular reflector disposed at a sidewall thereof, said illumination device further comprising:

- a reflective polarizer disposed in an optical path between the light extraction area and the light extraction means; and

- a quarter wavelength foil in an optical path between the specular reflector and the reflective polarizer.

17. (Previously presented) The illumination device of claim 8, wherein the light circulation device includes at least two light receiving surfaces and the incoherent solid state light source includes at least two light-emitting components, each light-emitting component being disposed adjacent to and confronting a corresponding one of the light receiving surfaces.

18. (Currently amended) The illumination device of claim 8, wherein the light circulation device has a cross-section thickness perpendicular to the light extraction area that is less near the light extraction area than at the light receiving surface.

19. (Previously presented) The illumination device of claim 8, including:

a second incoherent solid state light source adapted to emit light over at least a second light emission surface,

wherein the light circulation device includes at least a second light receiving surface adapted to receive the light from the second incoherent solid state light source, and

wherein the two incoherent solid state light sources each emit light having a different spectral color.

20. (Currently amended) The illumination device of claim 8, wherein the incoherent solid state light source includes a single extended LED having a length that is substantially larger than its width.

21. (New) The illumination device of claim 1, wherein the surface S_2 has a rectangular shape and an aspect ratio of 16:9.

22. (New) The illumination device of claim 1, including:

a reflective polarizer disposed in an optical path between the solid light guide and the light extraction device; and

a polarization changing reflector on at least one surface of the solid light guide.

23. (New) The illumination device of claim 22, wherein the polarization changing reflector includes a quarter wavelength foil.

24. (New) The illumination device of claim 1, including:

- a reflective polarizer disposed in an optical path between the solid light guide and the light extraction device,

- a reflector arranged on at least one surface of the solid light guide, and

- a quarter wavelength foil in an optical path between the reflector and the reflective polarizer.

25. (New) The illumination device of claim 1, wherein the light extraction device is a compound parabolic collimator.

26. (New) A method of manufacturing an illumination device, comprising:

- providing a solid light guide that circulates, the light guide including a first surface area for receiving light from a light source, and at least a second surface area that provides total internal reflection to the light from the light source,

- providing a light extraction device that has an index of refraction that substantially matches an index of refraction of the solid light guide, the light extraction device including:

- a third surface area for extracting light from the solid light guide, the third surface area being substantially smaller than the first surface area, and

- a fourth surface area for outputting light from the light extraction device, the fourth surface area being larger than the third surface area,

- optically coupling the light extraction device to the light guide by coupling the third surface area to the second surface area, eliminating the total internal reflection at the coupled area.

27. (New) The method of claim 26, including providing the light source and optically coupling the light source to the first surface area.

28. (New) The method of claim 25, including providing a reflective polarizer between the second and third surface areas.

29. (New) The method of claim 28, including providing a quarter wave foil between the second area and the reflective polarizer.

30. (New) The method of claim 26, including providing a polarization changing reflector on another surface of the solid light guide that does not provide total internal reflection.

31. (New) The method of claim 26, wherein the third surface area is smaller than the fourth surface area and the light extraction device includes a compound parabolic collimator.

32. (New) The method of claim 31, wherein the fourth surface area is rectangular and has an aspect ratio that substantially equals 16:9.